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ABSTRACT

Revised forecasts of fall headcount enrollments to 1995 for Texas higher education institutions are presented, based on 1980 census data. The revised forecasts are based on a combination of historical college attendance patterns by county and projected population for each county of the state. It is projected that enrollment in Texas institutions will grow at an average annual rate of about 1.3 percent, that enrollment will increase by about 86,000 students between 1980-1990, reaching a total of 761,563 during the period. By 1995 the total enrollment in all higher education institutions is expected to be slightly more than 798,000. Enrollment forecasts for 1985, 1990, and 1995 by type of institution are presented. Overall enrollment in the public senior colleges and universities will increase at an average annual rate of approximately 1 percent during the current decade, reaching an enrollment of 371,954 in 1990. Enrollment in the public community junior colleges will reach 294,016 in 1990, an increase of 42,940 students over 1980 enrollment. This represents an average annual increase of about 1.7 percent. The growth patterns for both senior institutions and community junior colleges during this period are attributable to the projected fluctuations in the state's demographic structure and the age makeup of the students. Enrollment forecasts for the 37 public senior colleges and universities are presented, including the magnitude and percentage of change for 5- to 10-year intervals. By 1990, 10 of these institutions are predicted to experience some enrollment loss below the fall 1980 level. Information on the forecasting methodology is appended. (SW)

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Fall Headcount Enrollment Forecasts To 1995

Texas Institutions of Higher Education

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Study Paper 27
Revised July 1982

Coordinating Board, Texas College and University System

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FOREWORD

In April 1978, the Coordinating Board published Study Paper 27, the first in the current series of enrollment forecasts for Texas colleges and universities. Revised fall headcount enrollment forecasts for the period 1980 - 1990 were adopted in July 1980. Although the actual enrollments were fairly close to the revised forecasts made for 1980 and 1981, the forecasts have been updated to incorporate new 1980 Census data and extend projections to 1995.

The revised forecasts are based on a combination of historical college attendance patterns by county and projected population for each county of the state. Basic assumptions regarding total population and birth, death and migration rates for county population projections were coordinated with the Texas 2000 Project, Office of the Governor.

Two major improvements have been incorporated in the forecasting methods. First, current population information was available from the 1980 Census of the Texas counties by age groups. The previous forecast relied on the 1970 Census with estimates for current population. A second improvement in the forecast technique is the use of assumed enrollment rates and enrollment distributions to formulate alternative forecasts. The availability of these data permitted the selection of a forecast option which best fits the enrollment pattern for each of the 37 public senior institutions.

Kenneth H. Ashworth
Commissioner of Higher Education

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Appendix: Projecting Texas County Population

ENROLLMENT IN TEXAS COLLEGES AND UNIVERSITIES TO 1995

Enrollment in all Texas institutions of higher education is expected to grow at an average annual rate of approximately 1.3 percent during this forecast period. Enrollment will increase by about 86,000 students between 1980 and 1990, reaching a total of 761,563. By 1995 the total enrollment in all institutions of higher education is expected to be slightly more than 798,000. Enrollment forecasts for 1985, 1990 and 1995 by type of institution are presented in Table 1. While the student increases predicted in this table are not dramatic, they do indicate a steady gain for most Texas institutions during a period in which many other states are expecting enrollment declines.

Overall enrollment in the public senior colleges and universities will increase at an average annual rate of approximately 1 percent during the current decade, reaching an enrollment of 371,954 in 1990. This is an increase of 32,901 students over the 1980 enrollment. Most of this increase will occur by 1985, with the last five years of the decade seeing enrollment growth of about 0.5 percent annually. From 1990 to 1995, some revitalization in the enrollment growth pattern will begin for public senior institutions. However, the annual growth rate during this period will remain approximately 1 percent.

Enrollment in the public community junior colleges will reach 294,016 in 1990, an increase of 42,940 students over 1980 enrollment. This represents an average annual increase of approximately 1.7 percent. A higher rate of growth is expected to occur in the first part of the decade than in the latter five years. And from 1990 to 1995 the annual average growth in community college enrollment will be less than 1 percent.

The growth patterns for both senior institutions and community junior colleges during this period are attributable to the projected fluctuations in the state's demographic structure and the age makeup of the students. Between 1985 and 1990 a decline is projected in the number of persons in Texas who are in the 20-24 year age group. Also, the increase in the 25-29 year age group is quite small (less than 2 percent, compared with an overall population increase of 11 percent). The college-going rates for both of these age groups are historically high; thus the potential loss in enrollment is significant. This loss is compensated for somewhat by an increase in the 15-19 year and the 30 and above age groups. Decreases in the population of some age groups critical to college enrollment continue into the 1990 to 1995 time frame. However, a marked upturn begins during this period in the number of 20 to 24 year olds. This is the age group from which senior colleges and universities historically receive the largest number of students. This, along with a continuing stable 15-19 year old population and a continuation of the increase in the 35 and above age group, has an overall salutary effect despite other demographic shifts.

Enrollment forecasts for the 37 public senior colleges and universities are shown in Table 2. Table 3 indicates the magnitude and percent of change for five- and 10-year intervals. By 1990, 10 of these institutions are predicted to experience some enrollment loss below the fall 1980 level. When interpreting the forecasts presented in Table 2, it should be kept in mind that the forecast model relies on historical patterns of attendance at each institution and projected population changes by county. Hence, to the extent that an institution is successful in modifying its drawing patterns, that alternative population concentrations develop or that institutions impose effective enrollment limitations, these forecasts may not reflect accurately actual future enrollments. Given current trends and relationships, however, the forecasts presented in Table 2 portray the most likely outcome.

Moreover, enrollments will be affected by the state of the Texas economy. Enrollments historically have expanded in times of increasing unemployment, in part because students want to prepare for better jobs. But students also have turned or returned to college because of the availability of government entitlements such as VA benefits, Social Security college benefits, government basic grants and even loans. Changes made and proposed in Washington in these programs may seriously affect decisions on whether to return to college. Furthermore, if even loan programs become restricted or much more costly to students, enrollments could be even further depressed.

Information on enrollments in higher education is fundamental to long-range planning by the Legislature, the Governor's Office, the Coordinating Board, and each of the Texas colleges and universities. Enrollments affect financing plans, proposed construction, staffing and faculty recruitment, and other fundamental issues in higher education all the way from the campus setting to the highest policy-making offices in the state.

A more detailed summary of the procedures used to obtain the enrollment forecasts presented in Table 1 and Table 2 is contained in the section following the tables.

Table 1
TEXAS INSTITUTIONS OF HIGHER EDUCATION
FALL HEADCOUNT ENROLLMENT FORECAST

Type of Institution	Actual 1980	Actual 1981	Forecast 1985	Forecast 1990	Forecast 1995
Public Senior Colleges & Universities	339,053	342,130	361,005	371,954	391,743
Public Community Junior Colleges	251,076	261,075	278,495	294,016	305,503
Independent Senior Colleges & Universities	76,586	78,386	81,698	84,026	88,258
Independent Junior Colleges	1,934	1,806	1,367	1,330	1,253
Texas State Technical Institute	6,783	7,448	9,098	10,267	11,422
Total, All Institutions	675,432	690,845	731,663	761,563	798,179

FORECASTED CHANGES IN
FALL HEADCOUNT ENROLLMENT

Type of Institution	1980-85 Number	1980-85 Percent	1985-90 Number	1985-90 Percent	1990-95 Number	1990-95 Percent	1980-90 Number	1980-90 Percent
Public Senior Colleges & Universities	21,952	6.47	10,949	3.03	19,789	5.32	32,901	9.70
Public Community Junior Colleges	27,419	10.92	15,521	5.57	11,487	3.91	42,940	17.10
Independent Senior Colleges & Universities	5,112	6.67	2,328	2.85	4,232	5.04	7,440	9.71
Independent Junior Colleges	- 567	- 29.32	- 37	- 2.71	- 77	- 5.79	- 604	- 31.23
Texas State Technical Institute	2,315	34.13	1,169	12.85	1,155	11.25	3,484	51.36
Total Change, All Institutions	56,231	8.33	29,900	4.09	36,616	4.81	86,131	12.75

Table 2
FALL HEADCOUNT ENROLLMENT FORECAST
TEXAS PUBLIC SENIOR COLLEGES AND UNIVERSITIES

Institution	Actual 1980	Actual 1981	Forecast 1985	Forecast 1990	Forecast 1995
Total Public Senior Colleges and Universities	339,053	342,130	361,005	371,954	391,743
Angelo State University	5,705	5,600	5,721	5,731	5,846
Corpus Christi State University	2,748	2,847	2,975	2,951	2,936
East Texas State University	8,322	7,867	8,253	8,609	9,036
ETSU at Texarkana	1,246	1,116	1,201	1,197	1,194
Lamar University	11,511	11,791	11,827	11,107	11,082
Lamar University at Orange	961	880	895	900	894
Lamar University at Port Arthur	1,054	1,053	997	919	867
Laredo State University	816	770	844	907	1,007
Midwestern State University	4,336	4,522	4,365	4,084	3,915
North Texas State University	17,158	17,487	18,867	19,951	21,811
Pan American University	8,358	8,065	8,757	9,773	11,372
Pan American University at Brownsville	1,146	1,036	1,256	1,377	1,612
Prairie View A&M University	5,511	4,529	4,801	4,937	5,368
Sam Houston State University	10,601	10,290	10,986	11,533	13,758
Southwest Texas State University	15,400	15,277	15,950	16,239	17,555

Table 2 (Continued)
FALL HEADCOUNT ENROLLMENT FORECAST
TEXAS PUBLIC SENIOR COLLEGES AND UNIVERSITIES

Institution	Actual 1980	Actual 1981	Forecast 1985	Forecast 1990	Forecast 1995
Stephen F. Austin State University	10,772	10,818	11,397	11,460	12,449
Sul Ross State University	1,641	1,563	1,519	1,468	1,490
Sul Ross State U. Uvalde Study Center	502	484	531	557	584
Tarleton State University	3,592	3,728	3,934	4,203	4,647
Texas A&I University	5,355	5,125	5,139	5,093	5,196
Texas A&M University	33,370	35,022	36,956	38,835	40,233
Texas A&M at Galveston	593	575	581	566	603
Texas Southern University	8,015	8,160	8,107	8,466	8,837
Texas Tech University	23,034	22,954	22,730	22,033	22,234
Texas Woman's University	7,872	7,477	8,283	9,147	10,098
The University of Texas at Arlington	20,166	20,952	21,341	21,944	22,547
The University of Texas at Austin[1]	46,148	48,145	50,727	51,043	53,743
The University of Texas at Dallas	6,368	6,904	7,688	8,490	8,923
The University of Texas at El Paso	15,750	15,436	16,464	17,410	18,262
The University of Texas of the Permian Basin	1,578	1,640	1,811	1,852	1,847
The University of Texas at San Antonio	9,831	10,562	11,256	11,378	11,500
The University of Texas at Tyler	1,921	1,955	2,178	2,284	2,434

Table 2 (Continued)
FALL HEADCOUNT ENROLLMENT FORECAST
TEXAS PUBLIC SENIOR COLLEGES AND UNIVERSITIES

Institution	Actual 1980	Actual 1981	Forecast 1985	Forecast 1990	Forecast 1995
University of Houston Central Campus	29,676	28,295	31,137	32,937	34,405
University of Houston at Clear Lake City	5,592	6,014	6,902	7,757	8,025
University of Houston Downtown College	5,055	5,766	6,999	7,362	7,811
University of Houston Victoria Center	790	732	783	794	807
West Texas State University	6,559	6,693	6,847	6,660	6,816

[1]Enrollment management policies at The University of Texas at Austin may produce lower enrollments; however, the effects of such policies cannot be determined at this time.

Table 3
FALL HEADCOUNT ENROLLMENT CHANGES
TEXAS PUBLIC SENIOR COLLEGES AND UNIVERSITIES

Institution	1980-85		1985-90		1990-95		1980-90	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Change All Public Senior Colleges & Universities	21,952	6.47	10,949	3.03	19,789	5.32	32,901	9.70
Angelo State University	16	0.28	10	0.17	115	2.01	26	0.46
Corpus Christi State University	227	8.26	-24	-0.81	-16	-0.54	203	7.39
East Texas State University	-69	-0.83	356	4.31	427	4.96	287	3.45
ETSU at Texarkana	-45	-3.61	-4	-0.33	-3	-0.25	-49	-3.93
Lamar University	316	2.75	-720	-6.09	-25	-0.23	-404	-3.51
Lamar University at Orange	-66	-6.87	5	0.56	-6	-0.67	-61	-6.35
Lamar University at Port Arthur	-57	-5.41	-78	-7.82	-52	-5.66	-135	-12.81
Laredo State University	28	3.43	63	7.46	100	11.03	91	11.15
Midwestern State University	29	0.67	-281	-6.44	-169	-4.14	-252	-5.81
North Texas State University	1,709	9.96	1,084	5.75	1,860	9.32	2,793	16.28
Pan American University	399	4.77	1,016	11.60	1,599	16.36	1,415	16.93
Pan American University at Brownsville	110	9.60	121	9.63	235	17.07	231	20.16
Prairie View A&M University	-710	-12.88	136	2.83	431	8.73	-574	-10.41
Sam Houston State University	385	3.63	547	4.98	2,225	19.29	932	8.79
Southwest Texas State University	550	3.57	289	1.81	1,316	8.10	839	5.45

Table 3 (Continued)
FALL HEADCOUNT ENROLLMENT CHANGES
TEXAS PUBLIC SENIOR COLLEGES AND UNIVERSITIES

Institution	1980-85 Number	1980-85 Percent	1985-90 Number	1985-90 Percent	1990-95 Number	1990-95 Percent	1980-90 Number	1980-90 Percent
Stephen F. Austin State University	625	5.80	63	0.55	989	8.63	688	6.39
Sul Ross State University	-122	-7.43	-51	-3.36	22	1.50	-173	-10.54
Sul Ross State U. Uvalde Study Center	29	5.78	26	4.90	27	4.85	55	10.96
Tarleton State University	342	9.52	269	6.84	444	10.56	611	17.01
Texas A&I University	-216	-4.03	-46	-0.90	103	2.02	-262	-4.89
Texas A&M University	3,586	10.75	1,879	5.08	1,398	3.60	5,465	16.38
Texas A&M at Galveston	-12	-2.02	-15	-2.58	37	6.54	-27	-4.55
Texas Southern University	92	1.15	359	4.43	371	4.38	451	5.63
Texas Tech University	-304	-1.32	-697	-3.07	201	0.91	-1,001	-4.35
Texas Woman's University	411	5.22	864	10.43	951	10.40	1,275	16.20
The University of Texas at Arlington	1,175	5.83	603	2.83	603	2.75	1,778	8.82
The University of Texas at Austin[1]	4,579	9.92	316	0.62	2,700	5.29	4,895	10.61
The University of Texas at Dallas	1,320	20.73	802	10.43	433	5.10	2,122	33.32
The University of Texas at El Paso	714	4.53	946	5.75	852	4.89	1,660	10.54
The University of Texas of the Permian Basin	233	14.77	41	2.26	-5	-0.27	274	17.36
The University of Texas at San Antonio	1,425	14.49	122	1.08	122	1.07	1,547	15.74
The University of Texas at Tyler	257	13.38	106	4.87	150	6.57	363	18.90

Table 3 (Continued)
FALL HEADCOUNT ENROLLMENT CHANGES
TEXAS PUBLIC SENIOR COLLEGES AND UNIVERSITIES

Institution	1980-85 Number	1980-85 Percent	1985-90 Number	1985-90 Percent	1990-95 Number	1990-95 Percent	1980-90 Number	1980-90 Percent
University of Houston Central Campus	1,461	4.92	1,800	5.78	1,468	4.46	3,261	10.99
University of Houston at Clear Lake City	1,310	23.43	855	12.39	268	3.45	2,165	38.72
University of Houston Downtown College	1,944	38.46	363	5.19	449	6.10	2,307	45.64
University of Houston Victoria Center	-7	-0.89	11	1.40	13	1.64	4	0.51
West Texas State University	288	4.39	-187	-2.73	156	2.34	101	1.54

[1]Enrollment management policies at The University of Texas at Austin may produce lower enrollments; however, the effects of such policies cannot be determined at this time.

SUMMARY OF FORECASTING PROCEDURES FOR TEXAS PUBLIC COLLEGES AND UNIVERSITIES

CONCEPT: Enrollment forecasts were made for each of the 37 public senior colleges and universities. Aggregate enrollment for all senior institutions was determined by summing institutions' enrollments. As a cross-check, aggregate public senior college and university enrollment also was determined by a second method. An aggregate enrollment forecast was made for public community colleges, but not for the individual institutions. All enrollment forecasts and the base data were for fall headcount in semester-length courses.

METHODOLOGY (GENERAL): The forecast methodology employed five years of historical enrollments combined with demographic data based on the Texas 1980 Census. County enrollments and county population by five age cohorts (15-19, 20-24, 25-29, 30-34, 35-up) were used. In general, the forecast procedure followed these steps:

1) five-year historical enrollments were used to develop alternative, age specific, enrollment ratios and enrollment distributions in each of the 254 counties;

2) college enrollment rates for the year 1980 were calculated by county age group;

3) trial enrollment forecasts, based on different assumptions, were made for 1981 using these enrollment rates, ratios and distribution;

4) these trial forecasts were compared with historical patterns and with actual 1981 enrollment to select the "best fit" alternative;

5) enrollment rates and distributions associated with the selected alternative were applied to county age population projections for 1985, 1990 and 1995 to obtain in-state enrollment forecasts for those years;

6) factors were developed and applied to the in-state enrollment forecasts to obtain total enrollment.

HISTORICAL ENROLLMENT: An example of the enrollment data utilized is shown in Table 4. This example covers the combined senior institutions and the combined community colleges for statewide enrollments. The same information was available for each of the 37 senior institutions and each of the 254 counties.

Table 4
FALL HEADCOUNT ENROLLMENT

Public Senior Institutions

Year	In-state Enrollment by Age Groups 15-19	20-24	25-29	30-34	35-up	All Ages*	Total** Enrollment
1976	78,718	122,416	43,642	19,886	25,402	290,064	315,168
1977	78,401	125,342	43,331	22,915	25,111	296,100	323,402
1978	78,161	124,600	43,575	23,894	27,627	297,856	328,817
1979	79,333	123,965	41,961	24,136	27,500	296,895	330,868
1980	80,277	126,105	42,400	24,549	28,737	302,068	339,053

Community Colleges

Year	In-state Enrollment by Age Groups 15-19	20-24	25-29	30-34	35-up	All Ages*	Total** Enrollment
1976	57,162	54,009	37,831	21,362	33,060	203,424	213,811
1977	58,120	58,241	36,947	23,441	35,324	212,073	222,917
1978	60,184	59,520	37,210	24,703	38,965	220,582	232,974
1979	63,652	62,259	37,370	24,845	38,734	226,860	239,136
1980	66,371	65,155	39,142	25,964	41,726	238,358	251,076

* Does not include students less than 15 years old or those listed as "age unknown."
** Includes in-state, foreign, and out-of-state students.

TEXAS POPULATION: Population data were based on the 1980 Census and projection process, which considered natural change (birth and death rates) and net migration. A summary of this procedure is given in the Appendix. Population data included number of persons for each county and statewide by age groups. The actual census of the population was used for 1980. Other years were projected. An example of the statewide population data is shown below in Table 5. The same data were available at the county level.

Table 5
TEXAS POPULATION (Statewide)

Year	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-up	Age 15-up	Total Population
1980	1,352,355	1,420,358	1,302,054	1,124,483	5,510,986	10,710,236	14,229,174
1981	1,337,230	1,428,829	1,350,754	1,174,769	5,666,213	10,957,768	14,576,738
1985	1,276,593	1,462,730	1,545,554	1,375,915	6,287,155	11,947,947	15,966,979
1990	1,365,274	1,373,323	1,573,233	1,670,888	7,388,863	13,371,581	17,704,912
1995	1,445,809	1,459,687	1,492,634	1,653,604	8,588,294	14,640,028	19,611,364

ENROLLMENT RATIOS AND DISTRIBUTIONS: The five-year (1976-80) in-state enrollment data base was used to obtain: (1) enrollment mix by county and age for public senior and community college students, and (2) the distribution of students by county and age among the 37 senior institutions.

- Three alternative ratios for the mix of students between public senior institutions and community colleges were developed:

  Alternative R1: The mix which existed in 1980.
  Alternative R2: The average mix for the five-year period.
  Alternative R3: The five-year trend analysis mix.

These alternative ratios were developed for each of the 254 counties.

Examples for selected counties are shown in Table 6.

Table 6
ENROLLMENT RATIOS

County	R1(1980 mix) Senior	R1(1980 mix) Community	R2(5-year average) Senior	R2(5-year average) Community	R3(5-year trend) Senior	R3(5-year trend) Community
Bexar	.447	.553	.427	.573	.461	.539
Dallas	.439	.561	.461	.539	.424	.576
El Paso	.581	.419	.611	.389	.543	.457
Harris	.650	.350	.669	.331	.637	.361
Lubbock	.865	.135	.891	.147	.851	.147
Tarrant	.466	.534	.475	.525	.472	.628
Travis	.583	.417	.649	.351	.552	.448
State	.559	.441	.574	.426	.552	.448

These data show that in 1980 approximately 56 percent of all students enrolled in public colleges in Texas attended senior institutions and that the trend is relatively stable (55.2 percent). However, there is a great disparity within individual counties. In Dallas County, 56 percent of the enrollment was in community colleges, and the trend is upward.

- Having determined what percentage of all students attend (or can be expected to attend) senior institutions, the next step was to examine how these students were distributed among the 37 public senior colleges and universities. This was also based on three alternatives:

  Alternative D1: The distribution which existed in 1980.
  Alternative D2: The average distribution for the five-year period.
  Alternative D3: The five-year trend analysis distribution.

These alternative distributions were developed for each of the 254 counties. The example (Table 7) is for Dallas County, Alternative D1. Similar computations were made for the other two alternatives. The process was repeated for all other counties.

Table 7
DISTRIBUTION OF PUBLIC SENIOR COLLEGE ENROLLMENT
DALLAS COUNTY: ALTERNATIVE D1 (1980)

Institution	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-up	All Ages
Angelo State	.005	.002	*	0	.001	.002
East Texas State	.049	.046	.088	.109	.184	.073
Lamar	.002	.001	0	0	.001	.001
Midwestern State	.004	.002	.001	.001	*	.002
North Texas State	.135	.176	.190	.179	.170	.168
Prairie View A&M	.025	.012	.009	.013	.021	.016
Sam Houston State	.009	.009	.001	.001	.001	.006
Southwest Texas	.031	.021	.003	.001	.001	.017
Stephen F. Austin	.079	.046	.007	.002	.002	.040
Sul Ross State	.001	.001	*	*	*	.001
Tarleton State	.008	.004	.001	*	.001	.004
Texas A&I	.001	.001	0	0	*	.001
Texas A&M	.153	.105	.024	.009	.005	.086
Texas A&M-Galveston	.001	.002	*	0	0	.001
Texas Southern	.003	.004	.004	.001	*	.003
Texas Tech	.114	.077	.007	.002	.001	.061
Texas Woman's	.023	.038	.087	.112	.159	.061
UT-Arlington	.147	.175	.211	.196	.116	.169
UT-Austin	.195	.162	.066	.029	.010	.129
UT-Dallas	.005	.098	.285	.336	.325	.147
UT-El Paso	.001	.001	.001	.001	0	.001
UT-San Antonio	*	*	.001	.001	0	.001
UT-Tyler	.001	.002	*	0	0	.001
UH-Central Campus	.006	.012	.012	.006	.001	.009
West Texas State	.003	.002	*	0	0	.001

* less than .001

These data indicate that enrollment by age group can vary significantly among institutions. For example, 6.1 percent of all students attending public senior colleges from Dallas County went to Texas Tech University and the same percentage to Texas Woman's University. However, Texas Tech draws more heavily from the younger age groups and Texas Woman's from the older ages. If the demography of the county changes, the enrollment in these institutions will be influenced accordingly.

COLLEGE ENROLLMENT RATES: The next step in the forecast procedure was to calculate college enrollment rates for (1) all senior and (2) all community colleges. This was done for each county and each age group using Fall 1980 enrollment and 1980 Census data. Enrollment for a given age group was divided by the county population for that age group. Enrollment rates for selected counties are shown in Table 8.

Table 8
1980 COLLEGE ENROLLMENT RATES FOR SELECTED COUNTIES

County	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-up	All Ages
Bexar						
Senior	.049	.077	.031	.022	.006	.026
Community	.054	.070	.047	.035	.012	.032
Dallas						
Senior	.054	.078	.028	.019	.005	.026
Community	.074	.069	.042	.032	.011	.033
El Paso						
Senior	.086	.113	.055	.033	.009	.047
Community	.045	.073	.052	.037	.013	.034
Harris						
Senior	.078	.098	.035	.023	.006	.034
Community	.037	.036	.023	.018	.007	.031
Lubbock						
Senior	.084	.126	.072	.042	.009	.053
Community	.037	.013	.012	.009	.003	.008
Tarrant						
Senior	.058	.083	.033	.021	.005	.027
Community	.064	.067	.043	.032	.011	.031
Travis						
Senior	.076	.087	.056	.042	.008	.043
Community	.046	.056	.042	.030	.011	.031
State						
Senior	.059	.089	.033	.022	.005	.028
Community	.049	.046	.030	.023	.008	.022

As an example, in 1980 4.9 percent of all persons ages 15-19 in Bexar County attended a public senior institution; 5.4 percent of this same group attended a community college.

TRIAL 1981 ENROLLMENT FORECASTS: Although Fall 1981 actual enrollments were available, they were not made a part of the five-year historical data base. Instead, ratios, rates and distributions derived from the historical enrollments were combined with the projected 1981 population in order to produce a set of trial 1981 forecasts. The enrollments produced by these alternative forecasts were compared with the actual Fall 1981 enrollment.

- First, in-state enrollments for all senior institutions and all community colleges were forecasted for 1981 using three alternatives. These forecasts and the actual 1981 in-state enrollments are shown in Table 9.

Table 9
TRIAL 1981 FORECASTS

	Public Senior Colleges	Community Colleges
Alternative R1 (1980 rates)	305,938	241,278
Alternative R2 (5-year average)	314,816	232,467
Alternative R3 (5-year trend)	302,196	245,135
Actual 1981 in-state enrollment	302,387	248,560

The "best fit" to actual 1981 in-state enrollment for both senior institutions and community colleges was Alternative R3, based on the five-year trend. However, Alternative R1, based on 1980 enrollment ratios, was considered close enough to retain as a trial for forecasting enrollment at individual senior institutions. Therefore, for senior institutions both Alternatives R1 and R3 were selected. For community colleges only Alternative R3 was selected.

- Next, the forecasted 1981 senior institution in-state enrollments were combined with the distributions of enrollment by institution, county and age. Since there were three distribution alternatives (D1, D2, D3) and two selected "best fit" ratios (R1, R3), this process resulted in six possible in-state 1981 enrollment forecasts for each of the 37 senior institutions. These options were defined as:

D1R1 - The 1980 distribution of enrollment among senior institutions combined with the 1980 enrollment rate.

D2R1 - The five-year average in distribution of enrollment among senior institutions combined with the 1980 enrollment rate.

D3R1 - The five-year trend in distribution of enrollment among senior institutions combined with the 1980 enrollment rate.

D1R3 - The 1980 distribution of enrollment among senior institutions combined with an enrollment rate adjusted for the five-year trend.

D2R3 - The five-year average distribution of enrollment among senior institutions combined with an enrollment rate adjusted for the five-year trend.

D3R3 - The five-year trend in distribution of enrollment among senior institutions combined with an enrollment rate adjusted for the five-year trend.

The 1981 enrollment forecasts resulting from these six options were compared with historical patterns and actual 1981 enrollment for each institution to determine the "best fit" option. For institutions in which the 1981 actual in-state enrollment varied significantly from the five-year pattern, the result was two possible "best fit" options--one based on the actual 1981 enrollment, and another based on an enrollment indicated by the five-year pattern. In Table 10, the left column indicates the selected option for each institution, and the next two columns compare actual 1981 enrollment with the forecast of in-state enrollment produced by this option. The sum of the 1981 "best fit" enrollment forecasts for the 37 senior institutions was 303,248. This deviates by only 0.29 percent from the actual 1981 in-state senior institutions enrollment.

TOTAL ENROLLMENT FACTOR: The final step in the enrollment forecast procedure was to develop a factor which would adjust the selected option for error and account for students with a residence other than one of the 254 Texas counties. Factors were calculated by combining: 1) the ratio between enrollment produced by the selected option and actual enrollment; and 2) the ratio between enrollment produced by the selected option and total enrollment (in-state, out-of-state and foreign).

SENIOR COLLEGE AND UNIVERSITY ENROLLMENT FORECASTS: Enrollment forecasts were produced for each public senior institution by applying the enrollment distributions and rates for the selected options to the forecasted population for 1985, 1990 and 1995. This was done at the county age group level for each institution and the results summed to obtain institutions' in-state enrollment. This in-state enrollment was then multiplied by the "total enrollment factor" (described above) to account for out-of-state and foreign students.

Aggregate senior college enrollment was obtained by summing the enrollment for all of the 37 institutions. However, overall enrollment also was computed by applying the public senior enrollment rates from Alternative R3 to the county-age group population projections for 1985, 1990 and 1995. Comparative results are shown Table 11.

TABLE 10
TRIAL 1981 ENROLLMENT FORECASTS
SENIOR INSTITUTIONS

INSTITUTION	SELECTED OPTION	1981 IN-STATE Actual	Forecast
Angelo State University	D1R3	5,378	5,440
Corpus Christi State University	D3R3	2,810	2,836
East Texas State University	D3R3	7,301	7,346
East Texas State University-Texarkana	D1R3	880	937
Lamar University	D1R3	10,816	10,531
Lamar University at Orange	D3R3	857	868
Lamar University at Port Arthur	D3R1	1,013	1,098
Laredo State University	D2R1	711	790
Midwestern State University	D3R1	4,064	3,950
North Texas State University	D1R3	14,606	14,613
Pan American University	D3R1	7,806	8,391
Pan American University-Brownsville	D1R3	1,024	1,202
Prairie View A&M University	D3R1	3,924	4,501
Sam Houston State University	D3R3	9,735	10,001
Southwest Texas State University	D1R3	14,784	15,071
Stephen F. Austin State University	D1R3	10,639	10,634
Sul Ross State University	D1R3	1,405	1,461
Sul Ross State University at Uvalde	D2R1	483	483
Tarleton State University	D3R3	3,496	3,464
Texas A&I University	D3R3	4,687	4,666
Texas A&M University	D3R1	29,649	29,525
Texas A&M University at Galveston	D1R3	331	378
Texas Southern University	D1R1	5,192	4,954
Texas Tech University	D1R3	20,689	20,613
Texas Woman's University	D3R3	6,148	6,153
The University of Texas at Arlington	D3R3	18,313	18,391
The University of Texas at Austin	D1R1	40,512	40,062
The University of Texas at Dallas	D3R1	6,063	5,972
The University of Texas at El Paso	D2R3	13,513	13,244
The University of Texas-Permian Basin	D2R1	1,508	1,496
The University of Texas-San Antonio	D3R3	10,362	10,391
The University of Texas at Tyler	D1R1	1,922	1,931
University of Houston Central Campus	D3R3	24,236	24,898
University of Houston Clear Lake City	D1R1	5,411	5,330
University of Houston Downtown College	D3R1	5,271	4,789
University of Houston Center at Victoria	D1R3	715	782
West Texas State University	D1R1	6,132	6,056
TOTAL, ALL INSTITUTIONS		302,386	303,248

Table 11
ENROLLMENT FORECASTS FOR ALL PUBLIC SENIOR INSTITUTIONS

Year	Forecast Based on Alternative R3	Forecast from Sum of Institutions
1985	359,936	360,777
1990	368,056	370,767
1995	389,104	391,172

The greatest deviation for any one year is less than 1 percent. Therefore, the results from the two methods were considered to be compatible. The total senior college enrollment forecasts are shown in Table 1.

COMMUNITY COLLEGE ENROLLMENT FORECASTS: For community colleges the "best fit" 1981 trial enrollment forecast was Alternative R3, which produced an in-state enrollment of 245,135 for 1981. A factor to adjust this in-state enrollment to total enrollment was obtained by dividing the actual 1981 total enrollment by the forecasted in-state enrollment (261,075 ÷ 245,135 = 1.065). It was necessary to compensate for the difference between the "best fit" enrollment for 1981 and the actual in-state enrollment (248,560 ÷ 245,135 = 1.014). The final adjustment factor to be applied to the in-state option was 1.08 (1.014 x 1.065). The rates associated with R3 then were combined with the population forecasts by county age groups for the years 1985, 1990 and 1995 and multiplied by this factor. The resulting community college enrollment forecasts are shown in Table 1.

SUMMARY OF FORECASTING PROCEDURES FOR TEXAS INDEPENDENT SENIOR COLLEGES AND UNIVERSITIES

Forecasts of total enrollment for the independent colleges and universities (senior and junior) were obtained by first determining the historical correlation between independent and public senior college total enrollments for the six-year period 1976-1981. After public senior college enrollment had been forecast by the methodology previously described, a regression equation was established to predict the independent institutions' total enrollment.

Observed data for the years 1976-1981 were used to develop the following equation:

$$Y_i = 76,529 + .21 (X_i - 329,923)$$

Where:

Y_i is the predicted value of independent institutions' enrollment

X_i is the predicted value of public senior college enrollment

Note: 76,529 is the mean of the observed values of independent enrollment, and 329,923 is the mean of the observed values of public enrollment during the period 1976-1981.

By a similar procedure of correlating historical enrollments, separate forecasts were obtained for independent senior and independent junior institutions. The resulting forecasts for 1985, 1990 and 1995 are shown in Table 1.

SUMMARY OF FORECASTING PROCEDURES FOR THE TEXAS STATE TECHNICAL INSTITUTE (TSTI)

Forecasts of total enrollment for the four campuses of the Texas State Technical Institute were obtained by first determining the historical correlation between TSTI and the vocational-technical program enrollment in community colleges for the six-year period 1976-1981. After community college enrollment had been forecast by the methodology previously described, a correlation analysis was used to predict the portion of total enrollment allocated for vocational-technical students. Using historical and predicted vocational-technical enrollment, a regression equation was established to predict the total Texas State Technical Institute enrollment.

Observed data for the years 1976-1981 were used to develop the following equation:

$$Y_i = 5,877 + .102 (X_i - 73,952)$$

Where:

Y_i is the predicted value of TSTI enrollment

X_i is the predicted value of the vocational-technical portion of community college enrollment

Note: 5,877 is the mean of the observed values of TSTI enrollment, and 73,952 is the mean of the observed values of community college vocational-technical enrollment during the period 1976-1981.

The resulting forecasts for 1985, 1990 and 1995 are shown in Table 1.

APPENDIX

PROJECTING TEXAS COUNTY POPULATION
1981, 1985, 1990 and 1995

METHODOLOGY FOR PROJECTING TEXAS COUNTY POPULATION BY AGE AND SEX FOR 1981, 1985, 1990 and 1995

The methodology used in projecting the population of Texas counties is a modification of the "Cohort-Migration-Survival Component" method. This procedure develops separate survival components for net migration and for mortality by age-sex cohorts and as such very closely parallels the order of demographic events in real life. The specific procedure used to make the county population projections consisted of the following steps:

1. Data were gathered for the male and female populations for each Texas county for each of 14 five-year age groups (0-4, 5-9, 10-14, ..., 60-64, and 65+) for the years 1970 and 1980 (for 1980 the five-year age groups 35-39 and 40-44 had to be approximated from 1978 estimates of these age groups since the 1980 Census data available at the time of the projections presented only the age group 35-44).

2. The 1970 age-sex cohorts were survived to 1980 by applying a set of standard life table survival rates for the U.S. in 1978, as shown in Table A-1. This step involved assuming that mortality rates by age and sex for Texas counties was the same as that for the U.S. in 1978. Prior to making this assumption, several comparisons of Texas-specific and more detailed U.S.-specific life tables were examined but rejected. This computation produced "expected 1980 totals" for each age-sex cohort as if no migration had occurred.

3. Net migration in each county was assumed to be the difference between the "expected 1980 totals" and the actual 1980 totals as reported by the 1980 Census. At the end of this step, we were able to produce "estimated 1970-1980 net migration rates" for each of the age-sex cohorts for each of the Texas counties.

4. We next assumed that the net migration rates that would prevail during the 1980-1990 decade would be 90 percent of those observed from 1970-1980.

5. Next, we projected the 1980 populations to 1990 -- first surviving the 1980 age-sex cohorts to 1990 using the survival rates in Table A-1, and second utilizing the migration rates developed in Step 4.

6. Upon completion of the preceding step, we produced 1990 projections for each of the 14 age-sex cohorts delineated with the exception of the male and female 0-4 and 5-9 years old cohorts. These four cohorts were estimated in the following manner:

a. We determined the number of males in the age groups 0-4 and 5-9 and the number of females in the age groups 0-4 and 5-9 per 1000 women in the age group 15-49 in 1980. For example, the ratio for males 0-4 equals the number of males 0-4 in 1980 divided by the number of females 15-49 in 1980.

b. From the above equations four child/woman ratios were produced: one each for males and females in age groups 0-4 and 5-9. Each ratio was taken one at a time and multiplied by the number of women 15-49 in 1990; these calculations produced the estimated numbers of males and females 0-4 and 5-9 in 1990. These numbers were entered into the previously developed schedule of age-sex projections for 1990.

What is assumed in this step is that for each county in 1980 the ratio of males and females 0-4 and 5-9 to females 15-49 would remain the same in the projection periods.

7. Steps 4-6 were repeated for the 2000 projections.

8. The projections for 1990 and 2000 were then adjusted to reflect concensus aggregate population estimates for these periods -- for 1990 - 17,704,912 and for 2000 - 21,517,942.

9. Age-sex projections for the various cohorts were then produced for selected intervening years between 1980 and 2000 (1981, 1985 and 1995). For the years 1985 and 1995 we utilized a five-year interpolation procedure.

For example, the number of males aged 20-24 in 1985 was found by taking the average of the number of males aged 15-19 in 1980 and the number of males aged 25-29 in 1990.

For 1981 the figures were found by linear interpolation. Schedules of age-sex projections were thus produced for the various age-sex cohorts for the years 1981, 1985, 1990 and 1995.

In addition to the above detailed procedures, 65 counties which experienced significant growth in the male age groups 15-34 as a result of the rapid increase in energy exploration had to be examined in detail as a result of abnormal distributions produced in 1990 and 2000 in the age groups 25-54. After a careful examination, adjustments to 18 of the counties were made to effect more reasonable age distributions of the population.

TABLE A-1
SURVIVAL RATES BY AGE AND SEX
FOR THE UNITED STATES, 1978

Age	Male	Female
0 - 4	0.9924	0.9942
5 - 9	0.9927	0.9970
10 - 14	0.9872	0.9951
15 - 19	0.9813	0.9935
20 - 24	0.9806	0.9927
25 - 29	0.9801	0.9911
30 - 34	0.9748	0.9871
35 - 39	0.9669	0.9792
40 - 44	0.9412	0.9670
45 - 49	0.8880	0.9379
50 - 54	0.8605	0.9251
55 - 59	0.7928	0.8900
60 - 64	0.7086	0.8424
65+	0.3330	0.4034

Source: Table 5-2 Vital Statistics of the United States, 1978, Volume 11, Section 5 Life Tables (Hyattsville, Md; U.S. Department of Health and Human Services, 1980) [DHHS Pub. #(PHS)81-1104].